

ABSTRACT

ANTI-PARALLEL COUPLED FREE LAYER FOR A GMR SENSOR FOR A MAGNETIC HEAD

A magnetic head including a GMR read head structure in which the outer end portions of the free magnetic layer are magnetically stabilized. The stabilization is achieved by the fabrication of thin film layers on top of the outer end portions that have an anti-parallel coupled magnetic field structure. A seed layer having a BCC crystal structure is deposited before a first magnetic field layer to increase coercivity of the anti-parallel coupled structure. The thickness of the layers is selected to produce a high coercivity structure having a net magnetization in the same direction as the magnetic field of the free magnetic layer. The anti-parallel coupled structure preferably includes a CoFeCr seed layer, a CoPtCr first magnetic layer, an Ru nonmagnetic layer and a CoPtCr second magnetic layer. An enhanced structure includes two CoFe layers formed below and above the Ru layer.